

FIG. 1

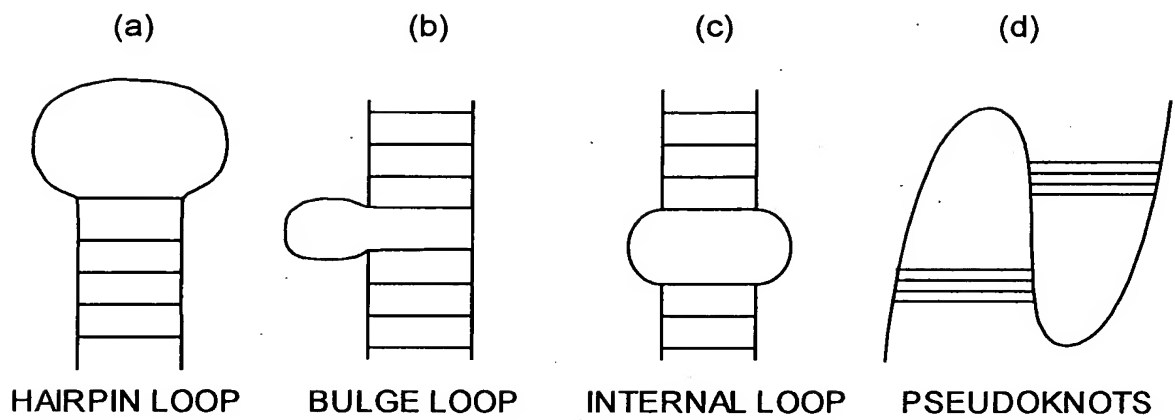
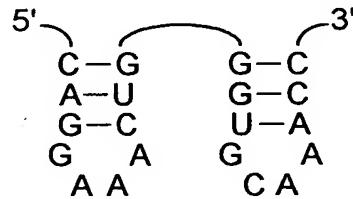


FIG.2

(a) RNA SEQUENCE

C	A	G	G	A	A	A	C	U	G	G	G	U	G	C	A	A	A	C	C
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(b) SECONDARY STRUCTURE (STEM STRUCTURE)



(c) PARSE TREE

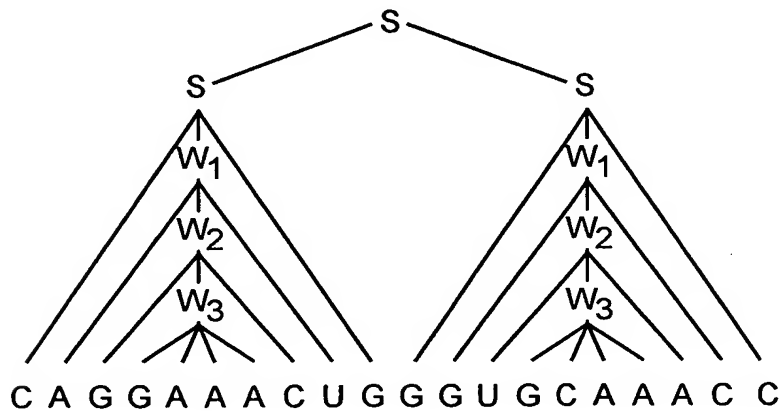


FIG.3

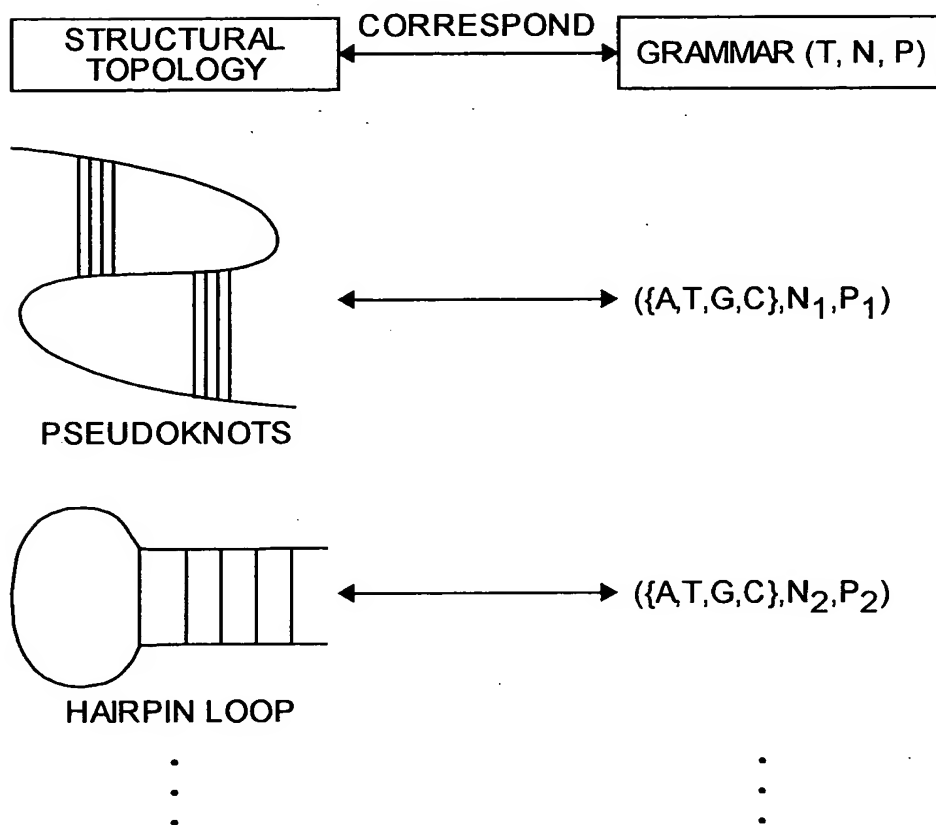


FIG.4

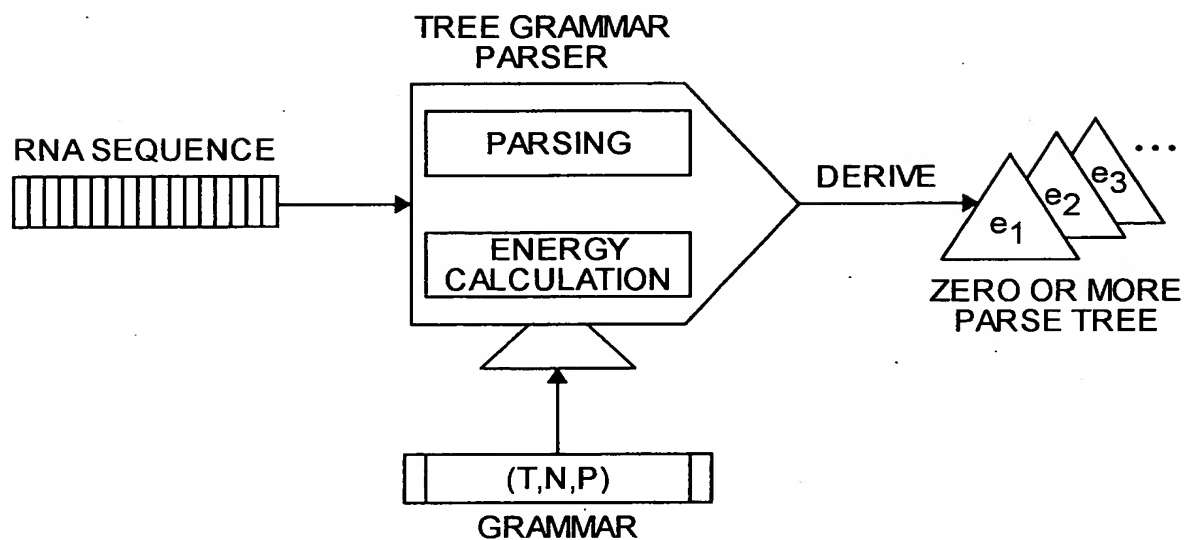


FIG. 5

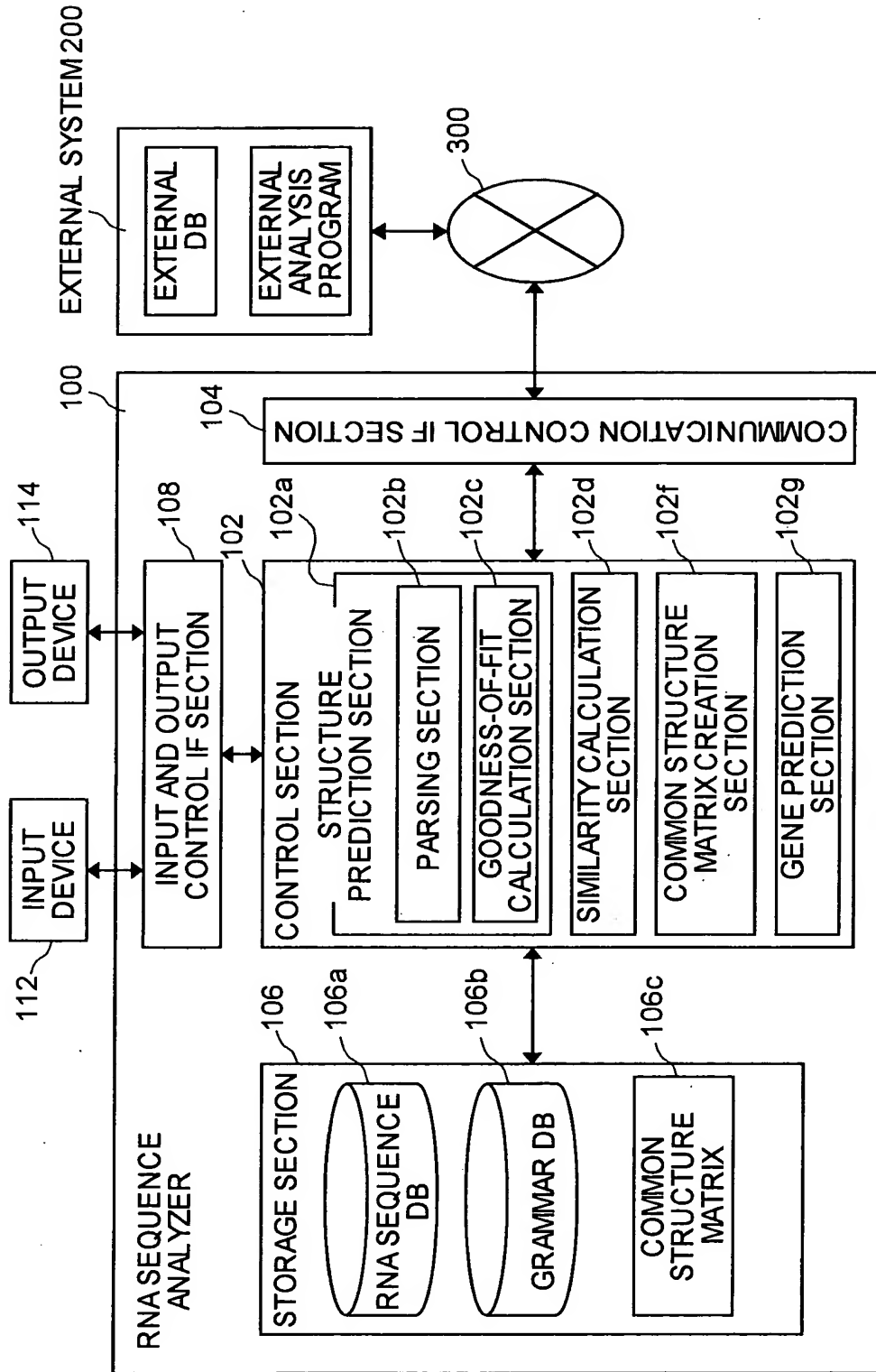


FIG.6

GRAMMAR DATABASE 106b

STRUCTURAL TOPOLOGY	GRAMMAR		
	TERMINAL SYMBOL T	NONTERMINAL SYMBOL N	PRODUCTION RULES P
PSEUDOKNOTS	{A,T,G,C}	N ₁	P ₁
HAIRPIN LOOP		N ₂	P ₂
INTERNAL LOOP		N ₃	P ₃
MULTI-BRANCHED LOOP		N ₄	P ₄
BULGE LOOP		N ₅	P ₅
⋮		⋮	⋮

FIG. 7

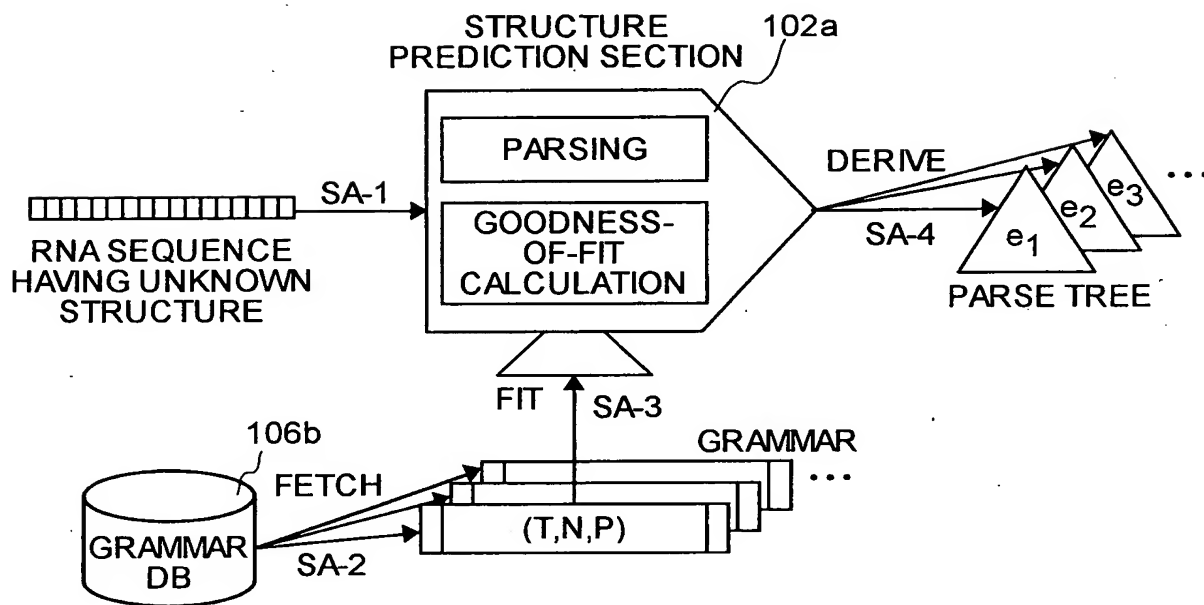


FIG.8

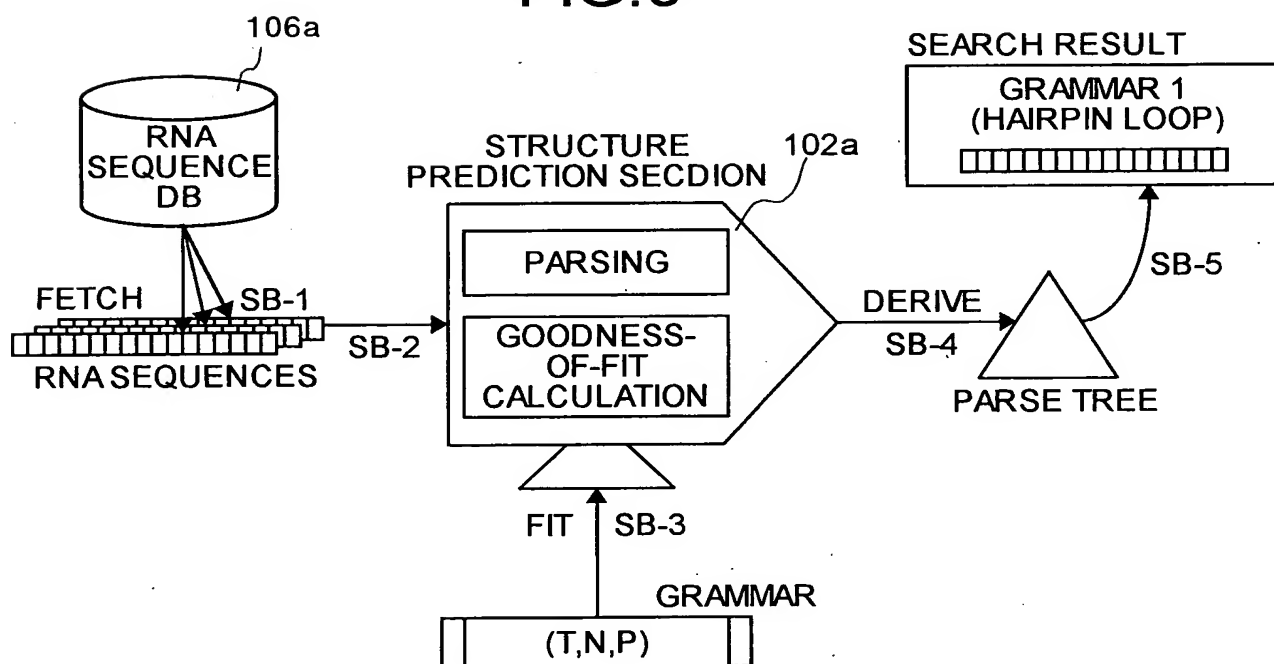


FIG.9

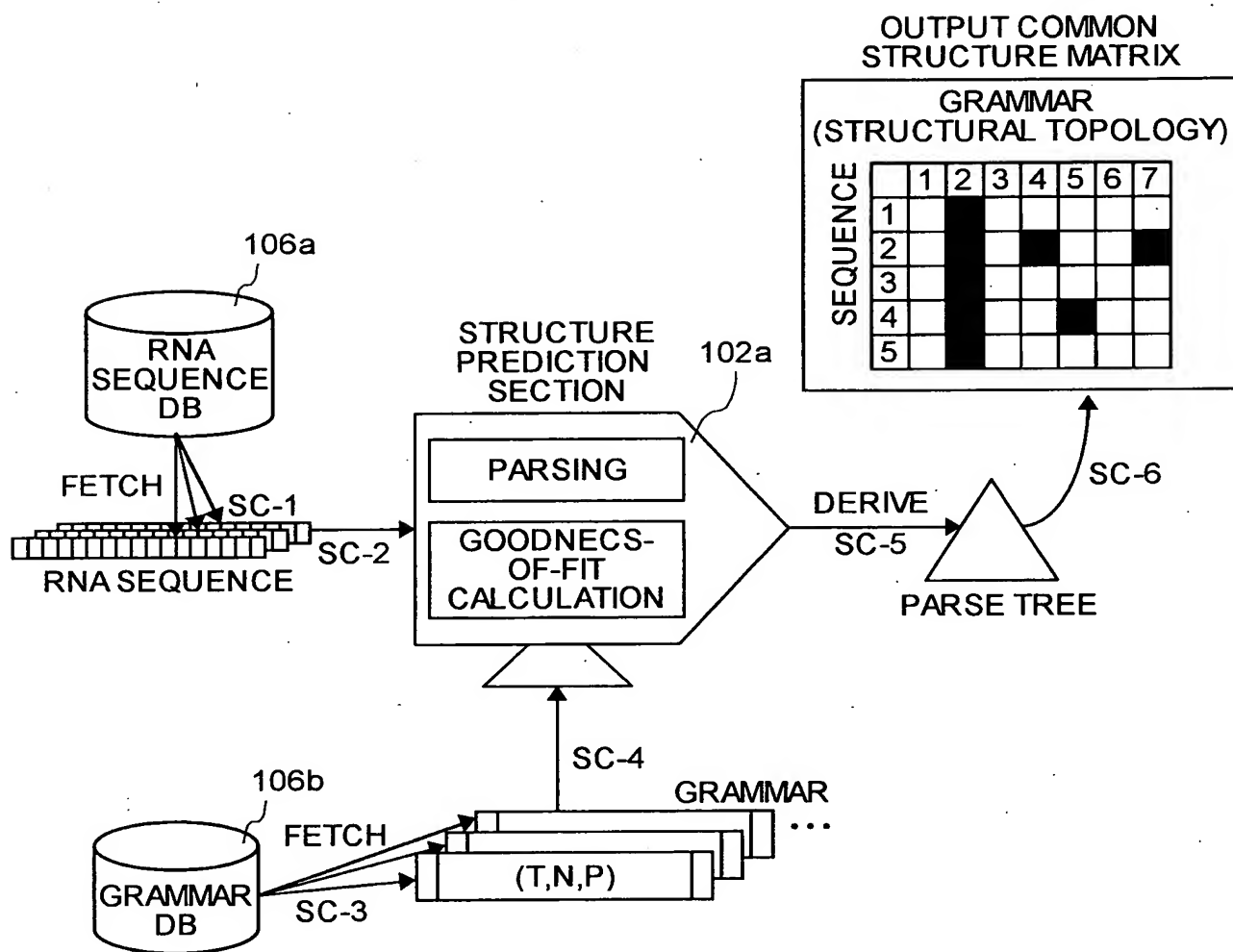


FIG.10

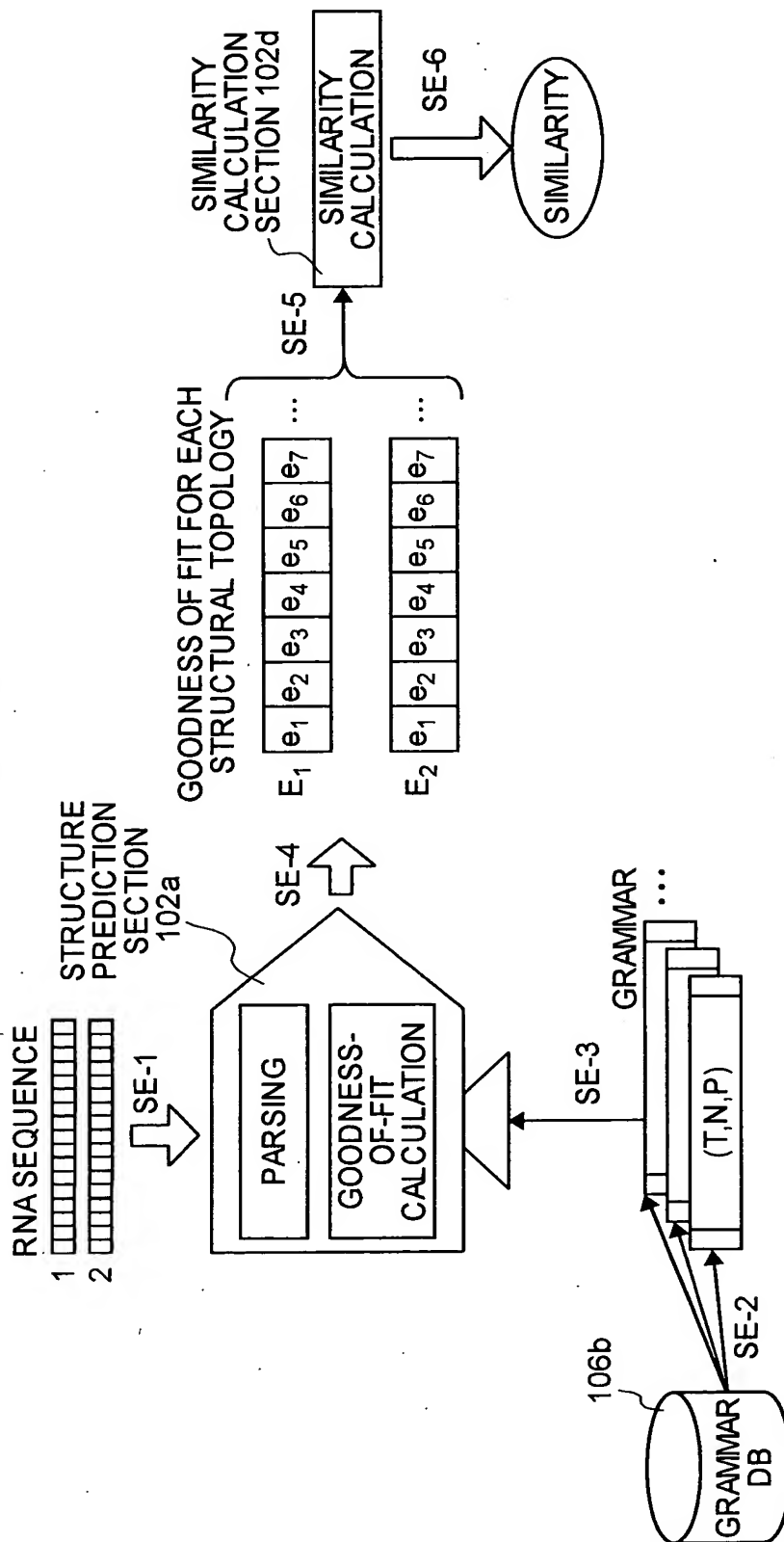


FIG. 11

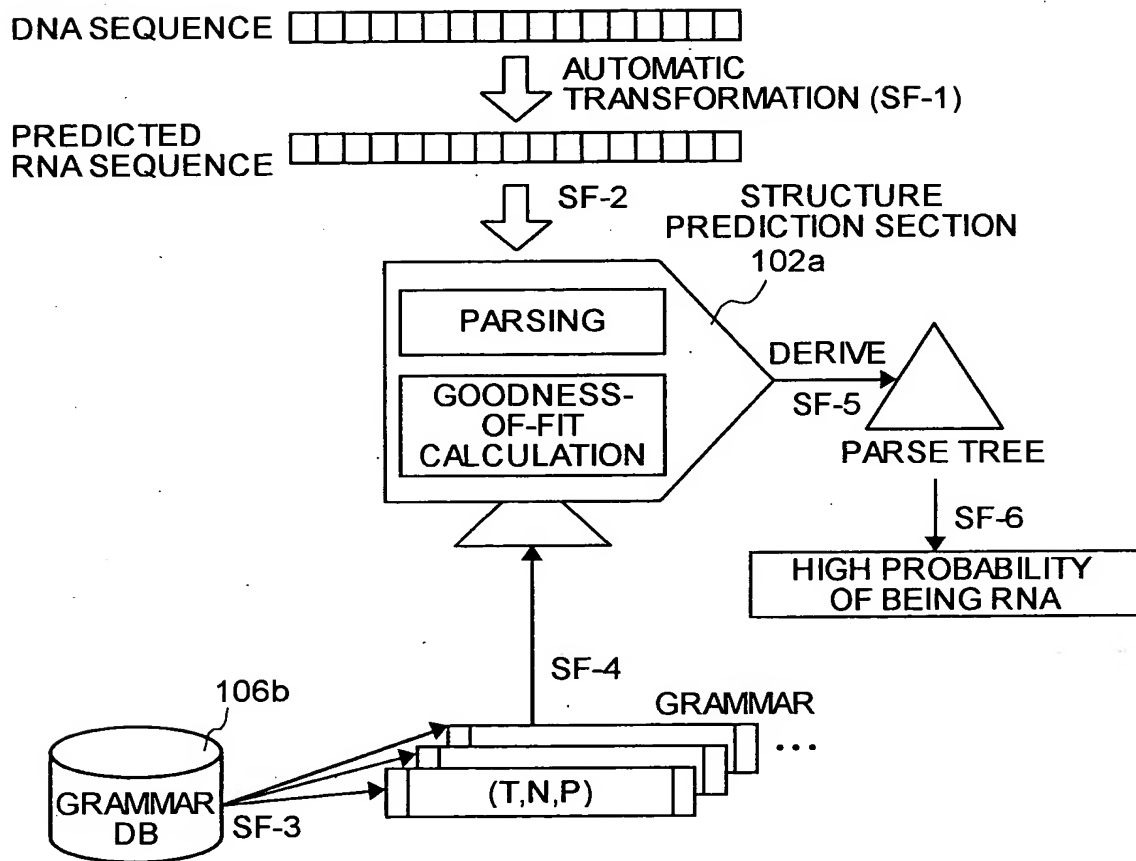


FIG.12

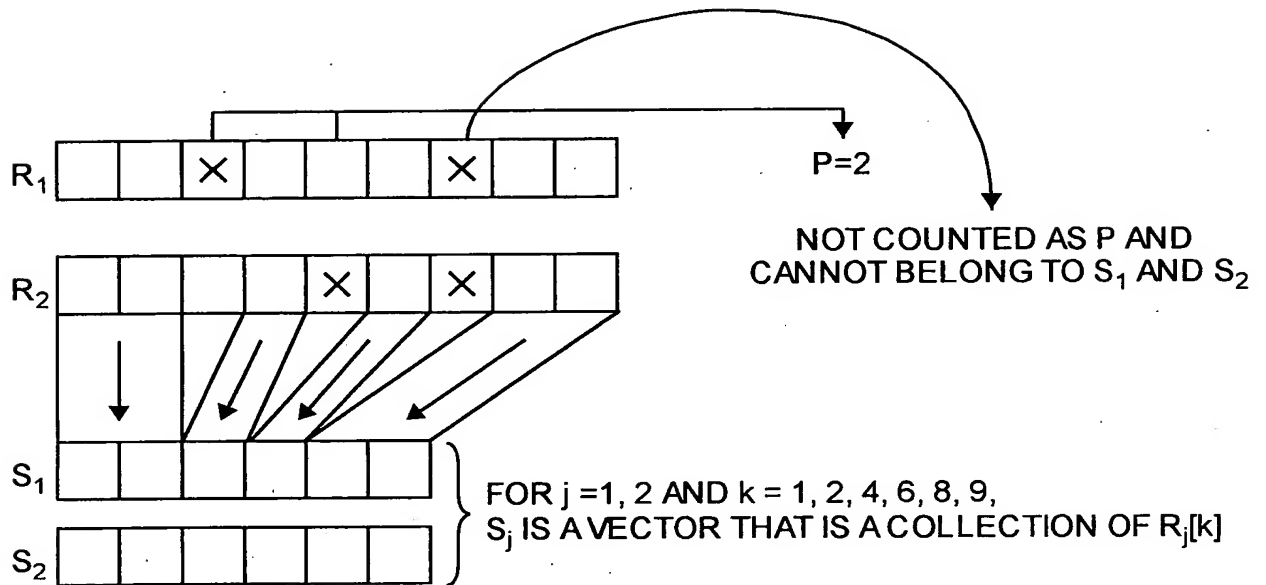


FIG. 13

(EXAMPLES OF RNA SECONDARY STRUCTURE TOPOLOGY)

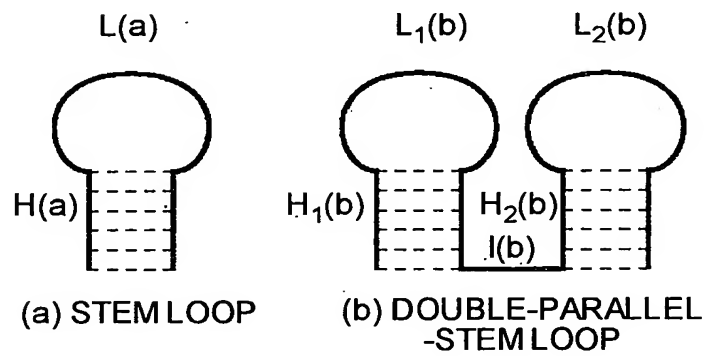


FIG. 15

(FREE ENERGIES OF BASE PAIRS [kcal/mol])

3'-SIDE BASE PAIR	5'-SIDE BASE PAIR				
	gu	au	ua	cg	gc
gu	-0.5	-0.5	-0.7	-1.5	-1.3
au	-0.5	-0.9	-1.1	-1.8	-2.3
ua	-0.7	-0.9	-0.9	-1.7	-2.1
cg	-1.9	-2.1	-2.3	-2.9	-3.4
gc	-1.5	-1.7	-1.8	-2.0	-2.9

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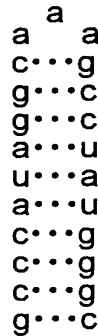
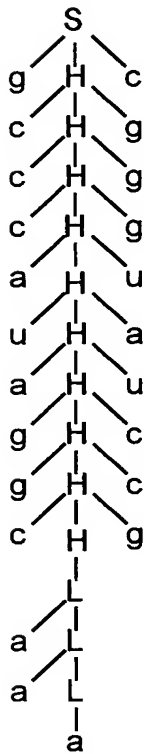
FIG.16

(FREE ENERGIES OF LOOPS [kcal/mol])

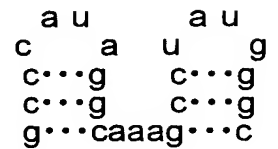
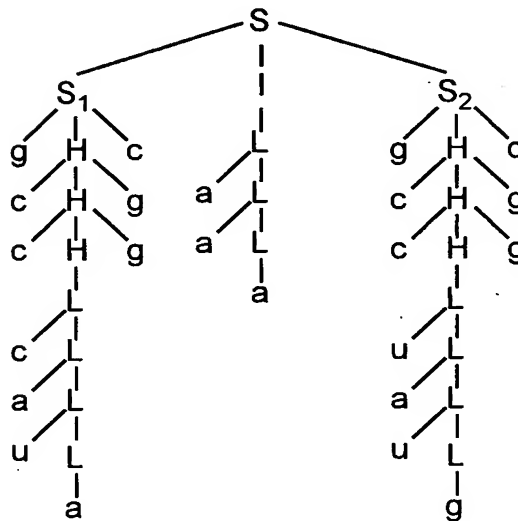
LOOP TYPE	LOOP SIZE													
	1	2	3	4	5	6	7	8	9	10	12	14	16	
BULGE LOOP	3.3	5.2	6.0	6.7	7.4	8.2	9.1	10.0	10.5	11.0	11.8	12.5	13.0	
HAIRPIN LOOP	-	-	7.4	5.9	4.4	4.3	4.1	4.1	4.2	4.3	4.9	5.6	6.1	
INTERNAL LOOP	-	0.8	1.3	1.7	2.1	2.5	2.6	2.8	3.1	3.6	4.4	5.1	5.6	

FIG. 17

(OPTIMUM PARSE TREES AND SECONDARY STRUCTURES OF S_2)



(1) DERIVATION BASED ON G_1



(2) DERIVATION BASED ON G_2

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FIG. 18

RANKING	TOPOLOGY	GOODNESS OF FIT	SECONDARY STRUCTURE
1	STEM LOOP T_1	13.7	SECONDARY STRUCTURE ILLUSTRATED IN Fig. 18(1)
2	DOUBLE-PARALLEL- STEM LOOP T_2	6.7	SECONDARY STRUCTURE ILLUSTRATED IN Fig. 18(2)

FIG.19

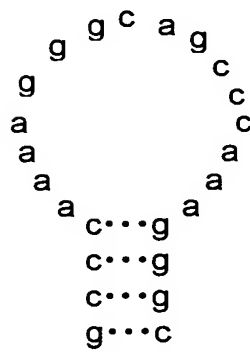
SEQUENCE	GOODNESS OF FIT	SECONDARY STRUCTURE
s_2	6.7	SECONDARY STRUCTURE ILLUSTRATED IN Fig. 18(2)

FIG.20

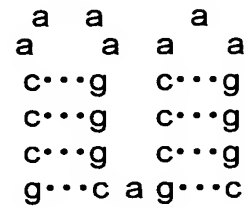
	T ₁	T ₂
s ₁	1.4	-
s ₂	13.6	6.7

FIG.21

(OPTIMUM SECONDARY STRUCTURE OF s)



(1)



(2)

FIG.22

	T ₁	T ₂
s	-	5.1

FIG.23

SEQUENCE	GOODNESS OF FIT	TOPOLOGY(SCORE)
s_2	6.7	$T_2(5.1)$